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09/643,579	11/25/2002	Richard Martin Broglie	BB1334 USNA CNT1	3114

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EXAMINER

KALLIS, RUSSELL

ART UNIT

PAPER NUMBER

1638

DATE MAILED: 05/07/2003

15

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/643,579	Applicant(s) BROGLIE ET AL.	
	Examiner Russell Kallis	Art Unit 1638	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 12 August 2002.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-36 is/are pending in the application.
- 4a) Of the above claim(s) 10-22, 26-28 and 30-35 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-9, 23-25, 29 and 36 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 2, 13. 6) ☐ Other: _____

DETAILED ACTION

Election/Restrictions

Applicant's election without traverse of Group I in Paper No. 10 is acknowledged.

Claims 1-9, 23-25, 29, and 36 are pending. Claims 10-22, 26-28, and 30-35 are non-elected.

Specification

The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

The title should delete non-elected subject matter i.e. "related enzymes". Further, the title should reflect that the invention is directed to transformed plants comprising a mutant delta-12 enzyme with reduced linolenic acid in seed oil.

The abstract of the disclosure is objected to because the abstract does not refer to the mutant delta-12 fatty acid desaturase enzymes of the claims. Correction is required. See MPEP § 608.01(b).

Claim Objections

Claim 36 is objected to because of the following informalities: The claim depends from a non-elected claim. Appropriate correction is required.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

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Claims 1-9, 23-25, 29, and 36 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Applicant broadly claims a mutant delta-12 fatty acid desaturase gene encoding a gene product of unspecified length and unspecified sequence identity.

Applicant describes a conserved His-Asp/Glu-Cys-Gly/Ala-His amino acid sequence (SEQ ID NO: 17) and the mutant delta-12 fatty acid desaturase polynucleotides of SEQ ID NO: 3 and 7 encoding the mutant delta-12 fatty acid desaturase amino acids of SEQ ID NO: 4 and 8.

Applicant does not describe any other mutant delta-12 fatty acid desaturase polynucleotides other than SEQ ID NO: 3 and 4 encoding amino acids of SEQ ID NO: 7 and 8.

Given the claim breadth and lack of guidance as discussed above, the specification does not provide an adequate written description of the claimed invention.

See *University of California V. Eli Lilly and Co.*, 43 USPQ2d 1398 (Fed. Cir. 1997), which teaches that the disclosure of a process for obtaining cDNA from a particular organism and the description of the encoded protein fail to provide an adequate written description of the actual cDNA from that organism which would encode the protein from that organism, despite the disclosure of a cDNA encoding that protein from another organism.

The court also addressed the manner by which genus of cDNAs might be described: "A description of a genus of cDNAs may be achieved by means of a recitation of a representative number of cDNAs, defined by nucleotide sequence, falling within the scope of the genus or of a

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recitation of structural features common to the members of the genus, which features constitute a substantial portion of the genus.” *Id.* At 1406.

Furthermore the disclosure of a single sequence (i.e. a single amino acid residue charge at a particular location) does not adequately describe a genus, per University of California. In addition, Claims 1 and 23 are broadly drawn to any mutation at the prescribed amino acid positions that completely eliminate delta-12 desaturase activity, while Applicant has not disclosed a mutation correlated with this particular function. Thus, the requirements of University of California are not met.

Given the failure of the mutant delta-12 fatty acid desaturase polynucleotides to be adequately described, methods of its use are also inadequately described. See Written Description Guidelines, Federal Register Vol. 66 No. 4, Friday January 5, 2001 “Notices”, pages 1099-1111.

Claims 1-9, 23-25, 29, and 36 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

Applicant broadly claims a plant comprising a recombinant construct comprising a polynucleotide encoding a mutant delta-12 fatty acid desaturase gene product of unspecified length, sequence identity, and activity; wherein transformed seeds of said plant have an altered fatty acid composition; and methods of making said plants and seeds thereof.

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Applicant teaches decreased linoleic acid in seeds of *Brassica napus* (var. Westar) transformed with the mutant delta-12 fatty acid desaturase genes of SEQ ID NO: 3 (pZPhMCFd2) and SEQ ID NO: 7 (pIMC140) (Example 4 pages 34-39).

Applicant does not teach any alterations in the fatty acid composition of plant seeds, structural or otherwise, other than a decrease in percent linoleic acid of total fatty acid in the seeds of *Brassica napus* (var. Westar) transformed with mutant delta-12 fatty acid desaturase genes of SEQ ID NO: 3 (pZPhMCFd2) and SEQ ID NO: 7 (pIMC140) when compared to wild type controls.

The unpredictability in making amino acid substitutions at a particular site in a protein that completely eliminate activity is illustrated in the example where 9 different changes the same position within a conserved phosphate binding loop of Rubisco activase resulted in mutant enzymes that showed both an increase and a decrease in their activity, but only one, the Q111V in Figure 1, column 2 on page 1078, showed elimination of any detectable activity and thus demonstrates the unpredictability of eliminating activity in any prescribed fashion. (Kallis R. *et al.*, Plant Physiology, July 2000, Vol. 123; pp. 1077-1086). Therefore, it is unpredictable that any one of a number of unspecified amino acid substitutions within the amino acid region of SEQ ID NO: 17 of the delta-12 desaturase would completely eliminate enzyme activity.

Further, guidance is lacking for using the method of Claim 23 for both increasing and decreasing the fatty acid composition of a seed. The unpredictability in such an approach is inherently unpredictable considering the same starting materials are to be used in the same prescribed fashion to give opposite results.

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Given the lack of guidance for making mutant delta-12 fatty acid desaturase constructs encoding non-functional enzymes, or for producing plants transformed with varied lengths of a said polynucleotides that would result in either altered or reduced percent linoleic acid levels in seeds of transformed plants, the breadth of the claims, and given the unpredictability in the art, undue trial and error experimentation would be needed by one skilled in the art to isolate a multitude of non-exemplified mutant delta-12 fatty acid desaturase polynucleotides, or to evaluate the ability of a multitude of non-exemplified mutant delta-12 fatty acid desaturase polynucleotides or non-exemplified delta-12 desaturase polynucleotide fragments to alter the phenotype of a multitude of transformed plant species. Therefore, the invention is not enabled.

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-9, 24-25, 29, and 36 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. All dependent claims are included in the rejection.

At Claim 1, lines 8-9, "construct confers" does not indicate any comparative basis. The claim should read --construct when expressed confers--.

At Claim 1, and throughout the claims, recitation of "gene" is indefinite.

There is not a standard definition for this term, i.e., a gene can denote the coding region of an amino acid sequence or a gene can be defined as containing regulatory elements operably linked to the coding polynucleotide sequence encoding an amino acid sequence. If appropriate, the term "polynucleotide" can be used to denote nucleic acid molecules that encode a polypeptide. All subsequent recitations of "gene" are also rejected.

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At Claim 2, the claim implies that the gene product of Claim 1 is not full length. If applicant intends the gene product of Claim 1 not to be full length, Applicant must amend Claim 1 to specify as such.

At Claim 4 and 5, recitation of % fatty acids, i.e. linoleic and oleic are indefinite. It is not clear if this is based upon a comparison to total fatty acid content in the seed or in comparison to the wild type seed linoleic and oleic fatty acid levels.

At Claim 6, "microsomal" does not further limit the claim, unless Claim 1 includes non-microsomal.

At Claim 7, it is not clear where the mutation is located the mutation of Claim 7 could be anywhere in the mutant gene coding sequence. The claim should read --wherein said at least one mutation in said amino acid region comprises--.

At Claim 8, it is not clear if the claimed sequence is a mutant variation of the amino acid region of claim 1 or not, otherwise the mutant region could be anywhere in the mutant gene coding sequence.

At Claim 23, "altered" is indefinite. It is not clear if "altered" refers to different level or different structure. Further, the claim is missing an expression step.

At Claim 24, the claim implies that the gene product of Claim 23 is not full length. If applicant intends the gene product of Claim 23 not to be full length, Applicant must amend Claim 23 to specify as such.

At Claim 29, line 2, after "content" insert --when expressed--.

At Claim 29, line 4, after "gene" insert --equivalent--.

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Claim 36, any 112 2nd rejections in claim 35 or claims which 35 depend from must be included here.

Double Patenting

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claims 1-9, 23-25, 29, and 36 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over Claims 1, 2, 6, 9, 10, 11, 12, and 13 of U.S. Patent No. 6,372,965. Although the conflicting claims are not identical, they are not patentably distinct from each other because the claims of patent 6,372,965, in view of the specification, render the claims of the instant application obvious.

The claims of the instant application are broadly drawn to plants transformed with a recombinant nucleic acid comprising a non-functional microsomal mutant delta-12 desaturase gene from *Brassica napus* having seeds with decreased linoleic acid (1.0% to 10.0% of total), elevated oleic acid (69%-90% of total), methods of making said plants and fragments of nucleic acids encoding said mutant enzymes, wherein the mutation is in a conserved amino acid region His-Glu/Asp-Cys-Ala/Gly-His and the mutation is the Lys in the conserved amino acid region His-Lys-Cys-Gly-His.

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Claims 1, 2, 6, 9, 10, 11, 12, and 13 of U.S. Patent No. 6,372,965 teaches an isolated nucleic acid fragment encoding a plant microsomal delta-12 desaturase, comprising an HECGH amino acid sequence, that hybridizes to a delta-12 desaturase nucleic acid fragment isolated from an oil species producing plant, plants comprising said gene, and seeds thereof.

Claims 1, 2, 6, 9, 10, 11, 12, and 13 of U.S. Patent No. 6,372,965 do not teach a plant comprising a recombinant nucleic acid construct comprising a full length non-functional mutant delta-desaturase isolated from *Brassica napus*, wherein the mutation is in a conserved amino acid region H-E-C-G-H and wherein the change is H-K-C-G-H; and a method of altering fatty acid composition in plant seeds by transformation with said recombinant construct comprising a seed specific regulatory region operably linked to said full length mutant delta-12 desaturase coding region.

Those portions of the specification which provide support for the patent may also be examined and considered when addressing the issue of whether a claim in the application defines an obvious variation of an invention claimed in the patent. *In re Vogel*, 422 F.2d 438, 441-42 164 USPQ 619, 622 (CCPA 1970). The court in *Vogel* recognized "that it is most difficult, if not meaningless, to try to say what is or is not an obvious variation of a claim," but that one can judge whether or not the invention claimed in an application is an obvious variation of an embodiment disclosed in the patent which provides support for the patent claim. According to the court, one must first "determine how much of the patent disclosure pertains to the invention claimed in the patent" because only "[t]his portion of the specification supports the patent claims and may be considered." The court pointed out that "this use of the disclosure is not in contravention of the cases forbidding its use as prior art, nor is it applying the patent as a reference under 35 U.S.C. 103, since only the disclosure of the invention claimed in the patent may be examined." MPEP 804(B)(1).

The specification of U.S. Patent No. 6,372,965 teaches a full length non-functional mutant plant microsomal delta-desaturase isolated and sequenced from *Brassica napus*, wherein the mutation has been identified as a Glutamate at position 106 (see Table 7, column 24; Region C) changed to a Lysine, and wherein the seeds of *Brassica napus* plants comprising said mutant

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microsomal delta-12 desaturase gene have 69-77% oleic acid levels (column 29, lines 45-67) and wherein the linoleic acid levels would necessarily range from about 1-10% of total fatty acid content of seeds given that transgenic antisense Brassica napus plants deficient in microsomal delta-12 desaturation have reduced levels of 18:2 (column 63, lines 40-53 and Table 16); and methods of reducing linoleic acid levels in seeds by introducing a recombinant nucleic acid into a plant (columns 61-62).

It would have been obvious to modify the nucleic acid fragment encoding a plant microsomal delta-12 desaturase gene to include a mutation that renders the enzyme non-functional for incorporation in a transformation vector comprising a seed specific promoter for use in a method to reduce linoleic acid and increase oleic acid levels in seeds of transformed plants. One of ordinary skill would have been motivated to make such modifications by the specific embodiments of U.S. Patent 6,372,965 that teach a mutant microsomal delta-12 enzyme in a Brassica napus line, that results in high oleic acid levels in seeds; crossed into a Brassica napus line comprising an antisense microsomal delta-12 desaturase construct, wherein the product of the cross showed in seeds further decreases in linoleic acid and further increases in oleic acid levels within the ranges of 1-10% and 69-90% respectively.

Claims 1-9 and 36 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-3, 5-9, and 32-43 of copending Application No. 08/572,027. Although the conflicting claims are not identical, they are not patentably distinct from each other because the claims of co-pending application 08/572027, in view of the specification, render the claims of the instant application obvious.

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The claims of the instant application are broadly drawn to plants transformed with a recombinant nucleic acid comprising a non-functional microsomal mutant delta-12 desaturase gene from *Brassica napus* having seeds with decreased linoleic acid (1.0% to 10.0% of total), elevated oleic acid (69%-90% of total), methods of making said plants, and fragments of nucleic acids encoding said mutant enzymes, wherein the mutation is in a conserved amino acid region His-Glu/Asp-Cys-Ala/Gly-His and the mutation is the Lys in the conserved amino acid region His-Lys-Cys-Gly-His.

Claims 1, 2, 3, 5, 6, 8, 9, 44, 55, 56, and 69 of co-pending application 08/572027 teach an isolated fragment of a mutant microsomal delta-12 desaturase gene from *Brassica napus*, comprising a conserved region H-D-C-G-H, wherein the mutation introduces a non-conservative amino acid substitution encoding a non-functional desaturase gene product, a method for making Brassicaceae plants comprising said mutant microsomal delta-12 desaturase gene wherein the linoleic acid levels are 2 to 12 % of total, and a method for identifying said mutation in said Brassicaceae line.

Claims 1, 2, 3, 5, 6, 8, 9, 44, 55, 56, and 69 of co-pending application 08/572027 do not teach an isolated mutant microsomal delta-12 gene having a K substituted for an E in the conserved amino acid region H-E-C-G-H resulting in H-K-C-G-H, and elevated oleic acid and decreased linoleic acid levels in seeds from plants transformed with said mutant gene.

Those portions of the specification which provide support for the patent may also be examined and considered when addressing the issue of whether a claim in the application defines an obvious variation of an invention claimed in the patent. *In re Vogel*, 422 F.2d 438, 441-42 164 USPQ 619, 622 (CCPA 1970). The court in *Vogel* recognized "that it is most difficult, if not meaningless, to try to say what is or is not an obvious variation of a claim," but that one can judge whether or not the invention claimed in an application is an obvious variation of an embodiment disclosed in the patent which provides support for the patent claim. According to the court, one must first "determine how much of the patent disclosure pertains to the invention

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claimed in the patent” because only “[t]his portion of the specification supports the patent claims and may be considered.” The court pointed out that “this use of the disclosure is not in contravention of the cases forbidding its use as prior art, nor is it applying the patent as a reference under 35 U.S.C. 103, since only the disclosure of the invention claimed in the patent may be examined.” MPEP 804(B)(1).

The specification of co-pending application 08/572,027 teaches a recombinant transformation vector comprising an isolated nucleic acid fragment of a mutant microsomal delta-12 desaturase gene from *Brassica napus* comprising the conserved region H-D-C-G-H mutated to H-K-C-G-H and a seed specific promoter; and plants comprising said mutant microsomal delta-12 desaturase gene producing seeds with elevated oleic acid levels (69-90%) and decreased linoleic acid levels (1-10%) (see Abstract; Example 7, pages 47-48 and Table XI; and Example XII, pages 61-62 and Table XX).

It would have been obvious to modify the nucleic acid fragment encoding a non-functional mutant plant microsomal delta-12 desaturase gene taught by co-pending application 08/572,027 to include a transformation vector comprising a seed specific promoter for use in a method to reduce linoleic acid and increase oleic acid levels in seeds of transformed plants. One of ordinary skill would have been motivated to make such modifications by the specific embodiments of co-pending application 08/572,027 that teach a full length non-functional mutant microsomal delta-12 enzyme in a *Brassica napus* line, that results in seeds having increases in oleic acid levels and decreases in linoleic acid within the ranges of 1-10% and 69-90% respectively.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1-9, 23-25, 29, and 36 are rejected under 35 U.S.C. 102(e) as being anticipated by U.S. Patent No. 6,372,965.

The applied reference has a common inventor with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 102(e) might be overcome either by a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not the invention “by another,” or by an appropriate showing under 37 CFR 1.131.

Claims 1-9 and 36 are provisionally rejected under 35 U.S.C. 102(e) as being anticipated by copending Application No. 08/572,027 which has a common inventor with the instant application. Based upon the earlier effective U.S. filing date of the copending application, it would constitute prior art under 35 U.S.C. 102(e), if published under 35 U.S.C. 122(b) or patented. This provisional rejection under 35 U.S.C. 102(e) is based upon a presumption of future publication or patenting of the copending application.

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This provisional rejection under 35 U.S.C. 102(e) might be overcome either by a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the copending application was derived from the inventor of this application and is thus not the invention "by another," or by an appropriate showing under 37 CFR 1.131. This rejection may not be overcome by the filing of a terminal disclaimer. See *In re Bartfeld*, 925 F.2d 1450, 17 USPQ2d 1885 (Fed. Cir. 1991).

All claims are rejected.

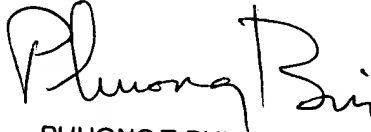
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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Russell Kallis whose telephone number is (703) 305-5417. The examiner can normally be reached on Monday-Friday 8:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Amy Nelson can be reached on (703) 306-3218. The fax phone numbers for the Group is (703) 308-4242 or (703) 305-3014.

Any inquiry of a general nature or relating to the status of this application or proceeding, or if the examiner cannot be reached as indicated above, should be directed to the receptionist, whose telephone number is (703) 308-0196.

Russell Kallis Ph.D.
May 2, 2003


PHUONG T. BUI
PRIMARY EXAMINER